ELSEVIER

Journal of Power Sources 67, Numbers 1–2, July–August 1997

JOURNAL OF POWER SOURCES

Contents

Preface 1
M.G. Mayer

Keynote Address

The European lead/acid industry and its future in the world market 3
P. Sena da Silva

Battery Technology

Innovative valve-regulated battery designs rekindle excitement in lead/acid battery technology 7
J.R. Pierson, J.P. Zagrodnik, R.T. Johnson

A new valve-regulated lead/acid automotive battery for use in original equipment and supply to the replacement market 15
S. Fouache, J.P. Douady, G. Fossati, C. Pascon

Benefits of controlling plate-group expansion: opening the door to advanced lead/acid batteries 27
A.F. Hollenkamp, R.H. Newnham

Performance and use of composite-substrate-based bipolar lead/acid batteries for pulsed-power applications 33
M. Saakes, D. Schellevis, D. van Trier, M. Wollersheim

Effect of antimony on premature capacity loss of lead/acid batteries 43
M. Kosai, S. Yasukawa, S. Osumi, M. Tsubota

Investigation of thermal phenomena in VRLA/AGM stationary lead/acid batteries with a thermal video imaging system 49
H. Giess

Progress in Battery Research

The tin effect in lead–calcium alloys 61
N. Bui, P. Mattesco, P. Simon, J. Steinmetz, E. Rocca

Dynamic modelling of lead/acid batteries using impedance spectroscopy for parameter identification 69
P. Maurache, E. Karden

Analysis of positive-plate resistance during cycling and the effect of compression 85
M. Calábek, K. Micka, P. Bača, P. Křivák, V. Šmarda

The PbO_2 agglomerate-of-spheres: investigation of four grid materials 93
E. Bashtavelova, A. Winsel

Improving active-material utilization 105
N.E. Bagshaw

Influence of electrically conductive polymers on the operating parameters of lead/acid batteries 111
V.E. Dmitrenko, B.Z. Lubentsov, S.G. Yevdokimenko, I.I. Lisyansky, V.A. Soldatenko

Battery Power for Electric Vehicles

Characteristics of a high-performance lead/acid battery for electric vehicles — an ALABC view 115
P.T. Moseley

Field experience with maintenance-free battery designs that incorporate thin tubular positives during electric-vehicle use 121
K.-D. Merz

Charging strategies for valve-regulated lead/acid batteries in electric-vehicle applications 125
M. Fernández, F. Trinidad

Phosphoric acid as an electrolyte additive for lead/acid batteries in electric-vehicle applications 135
E. Meissner

Advancing electric-vehicle development with pure-lead–tin battery technology 151
W.A. O'Brien, R.B. Stickel, G.J. May

Improvement of intelligent battery controller: state-of-charge indicator and associated functions 157
J. Alzieu, H. Smimite, C. Glaize

Battery Energy-Storage Systems

Large lead/acid batteries for frequency regulation, load levelling and solar power applications . . . 163
R. Wagner
Voltage quality and reliability from electrical energy-storage systems . . . 173
B. Ratering-Schnitzler, R. Harke, M. Schroeder, T. Stephanblome, U. Kriegler
Design and commissioning of a valve-regulated lead/acid battery energy-storage system for backing up critical environmental loads . . . 179
G.W. Hunt
Lead/acid batteries in systems to improve power quality . . . 187
P. Taylor, P. Butler, W. Nerbun
A strategy for low-cost utility connection of battery energy storage systems . . . 193
S. Wall, D. McShane
The influence of different operating conditions, especially over-discharge, on the lifetime and performance of lead/acid batteries for photovoltaic systems . . . 201
J. Garche, A. Jossen, H. Döring

Lead Supply and Recycling

Influences and trends in lead/acid battery demand, lead supply and prices . . . 213
N. Hawkes
Lead battery markets and recycling in Mexico and South America . . . 219
H. Valdez
Analysis of lead/acid battery life cycle factors: their impact on society and the lead industry . . . 225
J.G.S. Robertson, J.R. Wood, B. Ralph, R. Fenn
Impact of Basel convention on secondary-lead industry in economies in transition . . . 237
V.R. Subramanian
Opportunities for cost reduction and improved environmental impact in the lead and lead/acid battery industries . . . 243
N. Lewis

Alloys and Materials

A review of soft-lead specifications in the light of the requirements of valve-regulated lead/acid batteries . . . 251
D.M. Rice, J.E. Manders
Improved lead alloys for lead/acid positive grids in electric-vehicle applications . . . 257
L. Albert, A. Chabrol, L. Torcheux, Ph. Steyer, J.P. Hilger
The metallurgy and performance of cast and rolled lead alloys for battery grids . . . 267
R.D. Prengaman
Lead–calcium alloy development: quality improvement . . . 279
J.-L. Caillerie, L. Albert
Continuous casting of lead–antimony alloys . . . 283
E. Cattaneo, H. Stumpf, H.G. Tillmann, G. Sassmannshausen
Impact of separator design on the performance of gelled-electrolyte valve-regulated lead/acid batteries . . . 291
A.L. Ferreira, H.A. Lingscheidt
Challenges for automotive battery separator development . . . 299
W. Böhnstedt
Absorptive glass-mat separators for valve-regulated lead/acid batteries — thoughts on compression . . . 307
G.C. Zguris

List of Delegates . . . 315

Patents Alert . . . 327

Author Index of Volume 67 . . . 359

Subject Index of Volume 67 . . . 360